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Engineering Design File 1544

Staging, Storage, Sizing, and Treatment Facility (SSSTF)

Waste Verification and Treated Waste Statistical Approach

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4. Title: SSSTF Waste Verification and Treated Waste Statistical Approach

5. Summary:

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remediation wastes generated from within the Idaho National Engineering and Environmental Laboratory (INEEL) boundaries will be disposed of at the INEEL CERCLA Disposal Facility (ICDF). The Staging, Storage, Sizing, and Treatment Facility (SSSTF) will provide the capabilities to receive the waste from the INEEL Waste Area Group (WAG) 3 and other INEEL WAGs for direct disposal or for segregation and treatment within the SSSTF prior to disposal in the ICDF landfill unit or at an off-site disposal facility, as necessary. The SSSTF will serve as the waste acceptance and inventory control portal and treatment facility for wastes disposed of in the ICDF. The purpose of this Engineering and Design File (EDF) is to develop the verification requirements for the waste received and/or treated at the SSSTF and disposed of at the ICDF.

All waste to be received at the SSSTF is considered to be on-site and must be CERCLA-generated waste from within the INEEL boundaries, as the waste is being generated by one entity (DOE) for disposal by that entity. Waste acceptance requires 100% verification of the waste profile sheet. Auditing of Waste Profile generation and generator sampling, analysis, and shipping procedures will be conducted.

The verification requirements for direct disposal to ICDF landfill consist of the documentation review and visual inspections required to prove that the received waste matches the accompanying waste profile and meets the ICDF waste acceptance criteria (WAC). The ICDF Verification Program will include audits of the waste sampling performed at the generating site, and audits and inspections of the waste as it is excavated and loaded. The audits will be conducted by ICDF personnel.

The post-treatment verification requirements consist of the sampling and testing requirements for the treated waste to ensure that treatment was effective and that treated waste meets the waste acceptance criteria of the ICDF. This EDF defines the approach to waste verification upon receipt, and to post treatment sampling and analysis to ensure that all waste placed in the ICDF meets the WAC. The EDF also identifies the actions for the development of the waste verification and the procedure to get the plan approved by the regulatory agencies.

Waste that the generating project has identified which do not meet the ICDF WAC and will not meet the ICDF WAC following stabilization will not be sent to the SSSTF, but will be sent directly off-site. For these wastes, the project or WAG will contact Waste Generator services for assistance in identifying an off-site disposal facility, and meeting the requirements for shipment and disposal to the identified facility. The SSSTF will package waste for off-site disposal on a very limited case-by-case basis. Generally, waste for off-site disposal will not be accepted into the SSSTF. However, the SSSTF will be capable of performing the necessary waste characterization, identification, and manifesting activities.

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ACRONYMS

AOC	Area of Contamination
ARAR	Applicable or Relevant and Appropriate Requirement
CAMU	Corrective Action Management Unit
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CWID	Comprehensive Waste Inventory Database
DOE	U.S. Department of Energy
DQO	Data Quality Objective
EDF	Engineering Design File
EP	evaporation pond
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration
FFA/CO	Federal Facilities Agreement and Consent Order
HWMA	Hazardous Waste Management Act
ICDF	INEEL CERCLA Disposal Facility
IDHW	Idaho Department of Health and Welfare
INEEL	Idaho National Engineering and Environmental Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center
LDR	Land Disposal Restriction
NESHAP	National Emission Standard for Hazardous Air Pollutants
OU	Operable Unit
PCB	Polycholorinated Biphenyl
QA	quality assurance
RA	Remedial Action
RCRA	Resource Conservation and Recovery Act
RI/BRA	Remedial Investigation/Baseline Risk Assessment

ROD	Record of Decision
SSA	Staging and Storage Annex
SSSTF	Staging, Storage, Sizing, and Treatment Facility
TCLP	Toxicity Characteristic Leaching Procedure
WAC	Waste Acceptance Criteria
WAG	Waste Area Group
WIPP	Waste Isolation Pilot Plant

Staging, Storage, Sizing, and Treatment Facility (SSSTF) Waste Verification and Treated Waste Statistical Approach

1. INTRODUCTION

1.1 Scope and Applicability

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remediation wastes generated from within the Idaho National Engineering and Environmental Laboratory (INEEL) boundaries will be disposed of at the INEEL CERCLA Disposal Facility (ICDF). The Staging, Storage, Sizing, and Treatment Facility (SSSTF) will provide the capabilities to receive the waste from the INEEL Waste Area Group (WAG) 3 and other INEEL WAGs for direct disposal or for treatment within the SSSTF prior to disposal in the ICDF landfill unit, or off-site disposal facility as necessary. The SSSTF will serve as the waste acceptance and inventory control portal and treatment facility for wastes disposed of in the ICDF. The purpose of this Engineering and Design File (EDF) is to develop the verification requirements for the waste received and/or treated at the SSSTF and disposed of at the ICDF.

All waste to be received at the SSSTF is considered to be on-site and must be CERCLA-generated waste from within the INEEL boundaries, as the waste is being generated by one entity (DOE) for disposal by that entity. All waste characterization sampling will be performed at the generating site for waste being direct disposed to the ICDF. Waste acceptance requires 100% verification of the Waste Profile sheet prior to shipment. Auditing of Waste Profile preparation and waste generator sampling, analysis, and shipping procedures will be conducted by ICDF personnel at the generating location.

The verification requirements for direct disposal to ICDF consist of the documentation review and visual inspections required to ensure that the received waste matches the accompanying Waste Profile and meets the waste acceptance criteria (WAC) of the ICDF. The ICDF waste receipt verification process will include audits of the waste sampling performed at the generating site, and audits and inspections of the waste as it is excavated and loaded.

For waste stabilized at the SSSTF, the post-treatment verification requirements consist of the sampling and analysis requirements for the treated waste to ensure that the treatment was effective and that it meets the waste acceptance criteria of the ICDF. A Waste Analysis Plan will be developed for the treatment facility that will be based on the Data Quality Objective (DQO) process, and will describe the approach to sample collection procedures and frequency to verify that the treated waste meets Land Disposal Restrictions (LDRs).

This EDF defines the approach to waste verification at the point of generation and upon receipt at the SSSTF and to post-treatment sampling and analysis to ensure that all waste placed in the ICDF meets the WAC. Sampling and analysis of treated waste will be performed under a Waste Analysis Plan that will be developed during the treatment design.

Waste that the generating project has identified which do not meet the ICDF WAC and will not meet the ICDF WAC following stabilization will not be sent to the SSSTF, but will be sent directly off-site. For these wastes, the project or WAG will contact Waste Generator services for assistance in identifying an off-site disposal facility, and meeting the requirements for shipment and disposal to the identified facility. The SSSTF will package waste for off-site disposal on a very limited case-by-case basis. Generally, waste for off-site disposal will not be accepted into the SSSTF. However, the SSSTF

will be capable of performing the necessary waste characterization, identification, and manifesting activities.

1.2 Background

The Federal Facility Agreement and Consent Order (FFA/CO) negotiated with the U.S. Environmental Protection Agency (EPA) and Idaho Department of Health and Welfare (IDHW) resulted in a Remedial Investigation, Baseline Risk Assessment (RI/BRA). The RI/BRA was conducted to evaluate the nature and extent of soil and groundwater contamination at the Idaho Nuclear Technology and Engineering Center (INTEC). The results of the RI/BRA activities indicated that soils at certain release sites and groundwater contamination pose a potential risk above acceptable levels to human health and the environment. This resulted in a WAG 3, Operable Unit (OU) 3-13 Record of Decision (ROD).[a]

The 3-13 ROD requires contaminated soils to be removed and disposed of on site in the ICDF. The ICDF Complex consists of the SSSTF, the landfill for disposal of nonaqueous waste, and an evaporation pond (EP) for disposal of aqueous waste. The ICDF landfill will be engineered to meet the substantive requirements of DOE Order 435.1. The ICDF Complex will meet substantive requirements of the Resource Conservation and Recovery Act (RCRA) Subtitle C, , and Toxic Substance Control Act (TSCA) polychlorinated biphenyl (PCB) landfill design and construction requirements. The SSSTF will be a support facility constructed adjacent to the ICDF landfill.

The SSSTF will be a general-purpose facility used to stage, store, and treat INEEL CERCLA remedial, removal, and investigative waste prior to disposal in the ICDF or packaging for alternative disposals. The facility will consist of a storage/staging building and associated treatment equipment. Operations at the facility will include chemical/physical treatment (stabilization) to prepare landfill wastes to meet the Agency-approved site-specific WAC and RCRA land disposal restrictions (LDRs).

1.3 Report Overview

The Applicable or Relevant and Appropriate Requirements (ARARs) that applied to verification of received waste, and to sampling of treated waste are summarized and discussed in Section 2. The ARARs and other requirements were used to develop verification requirements, which are presented in Section 3. The process flow of required waste profile paperwork (see Appendix A), shipping, and waste verification is described in Section 3

2. WASTE RECEIVING, TREATMENT, AND DISPOSAL ARARS

Section 12 of the Final Record of Decision, Idaho Nuclear Technology and Engineering Center (see Reference 1) was reviewed for ARARs relating to waste receiving, treatment, and disposal. The ARARs that apply to waste verification are summarized in Technical and Functional Requirements. The ultimate objective of waste verification is to ensure that waste placed in the ICDF landfill cells and evaporation pond (EP) meets the environmental regulatory requirements as well as the radiological control and safety requirements for disposal to the ICDF. The most complex regulatory requirement for mixed waste disposal is the Land Disposal Restrictions portion of RCRA. Impacts of the LDRs on the SSSTF and ICDF are discussed below.

2.1 Land Disposal Restriction (LDRs) at the ICDF

As discussed on page 12-21 of the ROD, "The majority of soils excavated from WAG 3 for disposal at the ICDF will not be subject to Hazardous Waste Determination Requirements (IDAPA

16.01.05.006 [40 CFR 262.11]), Land Disposal Restrictions (LDRs) (IDAPA 16.01.05.011[40 CFR 268]), or Alternative LDR Treatment Standards for Contaminated Soil (IDAPA 16.01.05.011 [40 CFR 268.49]), since they will be placed directly in the ICDF because WAG 3 is considered one single AOC for purposes of disposal at the ICDF. However, any soils that may require treatment to meet the Waste Acceptance Criteria prior to placement in the ICDF are subject to LDRs. LDRs apply to contaminated soils at sites CPP-92, -97, -98, and –99. If wastes are received from areas outside the WAG 3 AOC for disposal at the ICDF, they will be required to meet the ICDF waste acceptance criteria and LDRs." Because of the Area of Contamination (AOC) concept as discussed in the OU 3-13 ROD (see Reference 1), the following discussion on LDRs applies only to wastes coming from outside the AOC, plus sites CPP-92, -97, -98, and –99 or to other wastes that trigger placement prior to disposal.

For waste to be accepted directly into the ICDF landfill, the Waste Profile will have to show that waste from outside the AOC (i.e., all waste from other WAGs) meets the LDRs. For soils, the alternative LDR treatment standards for contaminated soil (IDAPA 16.01.05.011 [40 CFR 268.49]) apply. For debris, the treatment standards for hazardous debris (IDAPA 16.01.05.011 [40 CFR 268.45]) apply.

The LDRs prohibit disposal of both listed and characteristic waste. The design inventory indicates that there are currently no soils that include both listed wastes (F codes) and characteristic wastes (D codes). However, if necessary, it would be possible to treat low-level contaminated soils that are both listed and characteristic to meet the LDR standards, as long as the underlying hazardous constituents for the listed waste are below the LDRs following treatment. No organic treatment will be performed at the SSSTF.

Treated waste sampling requirements: A Waste Analysis Plan will be prepared as part of the treatment facility design, as required by 40 CFR 268.7 (b).[2]

"Treatment facilities must test their wastes according to the frequency specified in their waste analysis plans as required by 40 CFR 264.13 (for permitted TSDs) or 40 CFR 265.13 (for interim status facilities). Such testing must be performed as provided in paragraphs (b)(1), (b)(2) and (b)(3) of this section.

(1) For wastes or contaminated soil with treatment standards expressed in the waste extract (TCLP), the owner or operator of the treatment facility must test an extract of the treatment residues, using test method 1311 (the Toxicity Characteristic Leaching Procedure, described in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846 as incorporated by reference in §260.11 of this chapter) to assure that the treatment residues extract meet the applicable treatment standards."

(2) For wastes or contaminated soil with treatment standards expressed as concentrations in the waste, the owner or operator of the treatment facility must test the treatment residues (not an extract of such residues) to assure that they meet the applicable treatment standards."

3. WASTE ACCEPTANCE AND VERIFICATION PROCESS

Waste entering the ICDF Complex will be controlled on the basis of source, physical form, and contaminant concentration/activity levels. A Waste Management Plan will be developed and implemented that includes planning, waste profiling and certification, waste shipment, waste receipt, inspection, and disposal. The objective of the waste verification process is to ensure that all waste placed in the ICDF landfill or accepted by the evaporation pond meets the respective WAC for the facility. Characterization of waste streams and completion of a Waste Profile is required before waste can be accepted into the SSSTF.

3.1 Characterization

Waste will be characterized by the WAG or remediation project intending to send waste to the ICDF Complex for disposal. A characterization process for radioactive and/or RCRA-regulated waste will be implemented in the Waste Management Plan. Waste streams will be identified and designated, and the tentative LDR status determined during the planning stages of the remediation project. For all wastes that must meet LDRs, if the total metal concentration in the waste are equal to or greater than 20 times the TCLP LDR values , a verification of toxicity using the Toxicity Characteristic Leaching Procedure (TCLP) procedure is required. A radiological analysis that includes both activity and speciation is also required.

When a waste designation is based solely on process knowledge, the generator must ensure that the chemical, physical, and radiological properties are adequately determined. Using process knowledge, the generator of a solid waste may declare the waste hazardous in lieu of testing. Declaration of a solid waste as hazardous subjects the waste to associated treatment, storage, and/or disposal requirements, per 40 CFR 264. The demonstration that a listed waste meets LDRs must be based on analytical data, not on process knowledge, or technology-based standards. Wastes from outside the AOC that are characteristic for toxicity because they fail TCLP can be accepted into the SSSTF for treatment (stabilization) prior to disposal at the ICDF.

3.1.1 Analysis for Metals and Volatile Organic Aromatics

As part of the characterization required for completion of the Waste Profile, all waste streams destined for disposal at the ICDF Landfill must be analyzed to demonstrate that they do not exhibit the characteristic of toxicity. This requirement can be met in one of two ways:

- Analyzing the waste using the TCLP or
- Using total waste analysis.

If the total waste analysis is used, the generator must demonstrate that the "individual analytes are not present in the waste, or that they are present but at such low concentrations that the appropriate regulatory levels could not possibly be exceeded" [Section 1.2 of the TCLP, 40 CFR 261.24(a)]. To evaluate the regulatory status of a 100% solid, a generator can compare the total analysis to 20X the TCLP leachate values. If no maximum theoretical leachate concentration equals or exceeds the appropriate regulatory limit, the solid cannot exhibit the toxicity characteristic, and the TCLP need not be run." *RCRA Regulations and Keyword Index, 2000 Edition* (see Reference 2).

For wastes that must be stabilized, the TCLP analysis must be performed following stabilization to demonstrate that the stabilization treatment was effective. For stabilized characteristic waste, the underlying hazardous constituents must be treated to the LDR levels for that constituent.

3.1.2 Paint Filter Test

All waste streams destined for the ICDF landfill must pass the paint filter test (Method 9095A {Paint Filter Liquids Test} as described in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods"[3]) prior to disposal.

3.2 Waste Profile Process

Based on the characterization information, waste profiles and a waste designation shall be developed and approved for each waste stream. The SSSTF WAC will be an overriding WAC that will include the ICDF Landfill WAC, the Treatment WAC, and the Evaporation Pond WAC. The waste profile for all incoming non-aqueous waste will indicate if the waste meets the ICDF WAC for direct landfill disposal, or whether it meets the WAC for stabilization, (and will meet the ICDF WAC following stabilization). Therefore, by verifying that the waste matches the waste profile and that the characterization on the profile is accurate, it will also be verified that the waste meets the Treatment, ICDF landfill, or Evaporation Pond WAC.

3.2.1 Data Quality Objectives

The Data Quality Objective (DQO) process or a comparable process will be used by the generating WAG to identify characterization parameters and acceptable uncertainty in characterization data and to develop a Sampling and Analysis Plan that will allow the Waste Profile sheet to be completed.

A Waste Profile sheet, as shown in Appendix A will be required for each waste entering the SSSTF. The generator of the waste will provide a completed Waste Profile sheet a minimum of six weeks prior to anticipated shipping. The project generating the waste must include the following information on the Waste Profile sheet:

- Documented Quality Assurance Program
- Procedures used for sampling, packaging, transporting, laboratory analysis, and data control
- Documentation of procedure/process controls.

Separate quality assurance (QA) programs and procedures are not needed for each Waste Profile sheet, but the Waste Profile sheet must reference established QA program and established procedures that were used to generate the waste profile.

In addition, the generator will be required to provide the following information to the ICDF designee:

- Analytical Results
- Radioactivity (concentration and speciation)
- Process knowledge
- Physical Description
- Hazardous Waste Determination

- LDR Determination (applies to all waste from outside the WAG 3 AOC)
- CERCLA database number
- Volume/Quantity
- Container and Packaging Type
- Container Identification and Labeling.

Other information/analytical results that may be required include, but are not limited to:

- Paint filter
- Reactivity
- pH/Corrosivity
- Special analytical processes required for a specific waste type.

Analytical data will include the radiological screening results, and the results of these analyses will be filed with the copies of the Waste Profile sheets and all other supporting material for each waste. The waste generator will provide a copy of the analytical results attached to the Waste Profile sheet.

Aqueous waste from ICDF Complex sources (landfill leachate and decontamination water) will be tested periodically to verify that the waste stream continues to meet the EP WAC. Aqueous waste coming from sources other than the ICDF leachate and ICDF complex decontamination water will be stored at the Staging and Storage Annex (SSA) and must meet the requirements in the Waste Management Plan for the Staging and Storage Annex[4] prior to being accepted for storage. The SSA will operate as a separate unit until the SSSTF is operational, then it will administratively become part of the SSSTF. The Waste Profile used for acceptance into the SSA before operation of the SSSTF will suffice to document that the aqueous waste meets the EP WAC.

The data quality objective (DQO) tables included in Appendix B were originally developed when it was envisioned that all waste streams would be initially sampled at the generating project/WAG location and re-sampled at the SSSTF for confirmation. Because the INEEL is one site, and DOE has responsibility for the entire site, this was determined to be redundant internal sampling and analysis, at greatly increased cost. The interactive process between the ICDF Complex and the generating projects described in this EDF has replaced the original concept. The DQO process will be repeated several times for waste that will be treated at the SSSTF and disposed to the ICDF landfill as follows:

- Sampling to complete the Waste Profile Sheet
- Fingerprint sampling during the remediation as the containers are loaded,
- ICDF auditing of waste shipments
- Development of the SSSTF Waste Analysis Plan for Treated Waste

Development of the sampling and analysis portions of the SSSTF Treatability Study Work Plan.

3.3 Process Flow for Waste from Generation to Disposal

The process flow for waste planning, shipping, receiving, verification, and disposal is outlined in the flow charts in Figure 3-1 through 3-4. The WAG or project generating the waste must notify the ICDF complex of its intent to ship waste to the ICDF complex during the planning of the remedial action. The generator will receive the ICDF WAC and develop a Waste Profile (refer to Appendix A), which documents that the waste meets the WAC.

Any sampling and analysis necessary for the generator WAG/project to complete the Waste Profile sheet will be planned by the generator WAG in their CERCLA documents and performed by the generating WAG during or prior to execution of the remedial action. Because of the required document development and review times, the generating WAG should notify the ICDF of their intent to ship waste at least 6 months in advance of shipment. This should allow adequate time for coordination between the generating WAG and the ICDF. The generating WAG will have enough information on the waste to know if it can go directly to the ICDF for disposal or if the waste must go to the SSSTF for treatment to meet the ICDF WAC prior to disposal. The Waste Profile must be received, reviewed, and accepted by the ICDF at least 6 weeks prior to the intended ship date for the waste to be scheduled into the ICDF. ICDF will audit preparation of the waste profile. This may include audit and/or inspection of any of the items listed in Section 3.2.

3.3.1 Non-aqueous Waste

The process for disposal of non-aqueous waste to the ICDF landfill is outlined in Figure 3-1 from the planning through the disposal.

- First, (box 1) the project that will be generating the waste notifies the ICDF Complex of the intent to ship non-aqueous waste to the ICDF Complex for disposal or for treatment and disposal.

- The process of planning, sampling, analysis, and completion of the Waste Profile sheets will be reviewed and/or audited by the ICDF Complex personnel (box 2).

- The completed Waste Profile sheet is submitted to the ICDF Complex (box 3).

- ICDF Complex Management reviews the Waste Profile and either accepts it or rejects it (box 4) and determines the destination of the waste. If the waste profile is rejected, (boxes 5 and 6) the profile may be resubmitted by the WAG manager after suitable corrections.

- If the waste profile is approved, (box 7) the waste will be assigned a shipping date and a destination in the ICDF or SSSTF. The destination for nonaqueous waste will be the ICDF landfill if the waste is suitable for direct disposal or the SSSTF if the waste requires treatment prior to disposal. For nonaqueous wastes that will be treated in the SSSTF, the final disposal destination will be the ICDF landfill.

- Waste Profile Verification and fingerprinting will be done at the remediation site (box 8). All of the waste packaged for shipment to the SSSTF will be checked against the Waste Profile, visually inspected, and "fingerprinted" during the remediation excavation and/or loading process to ensure that the waste matches the submitted Waste Profile. Fingerprinting consists of nonintrusive analysis such as a surface radiological survey. If the Waste Profile verification and fingerprinting activities indicate that the waste does not match the profile, the waste will be set aside for resolution of the identified problem. If the issue is not resolved, the waste will not be shipped to the SSSTF.

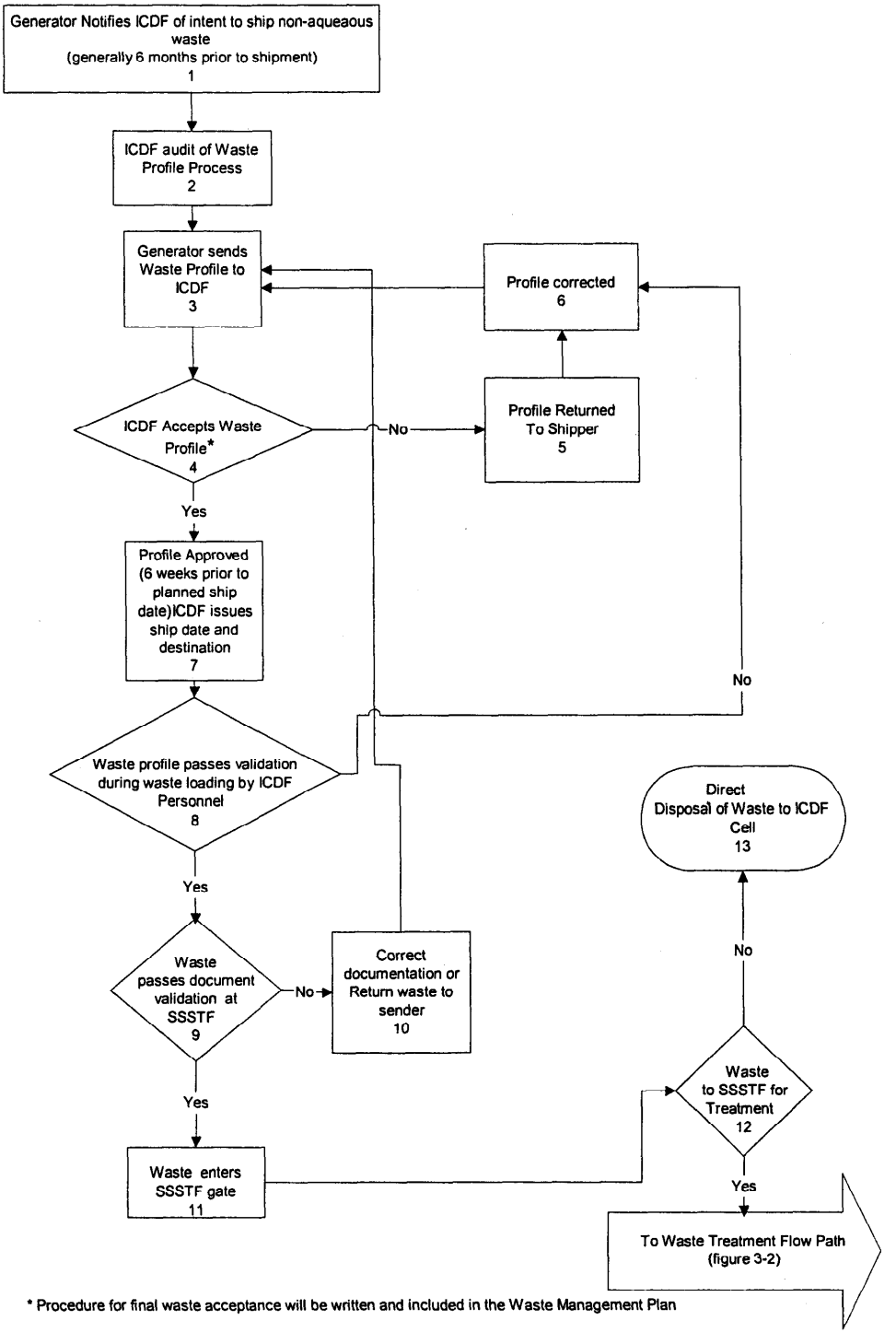
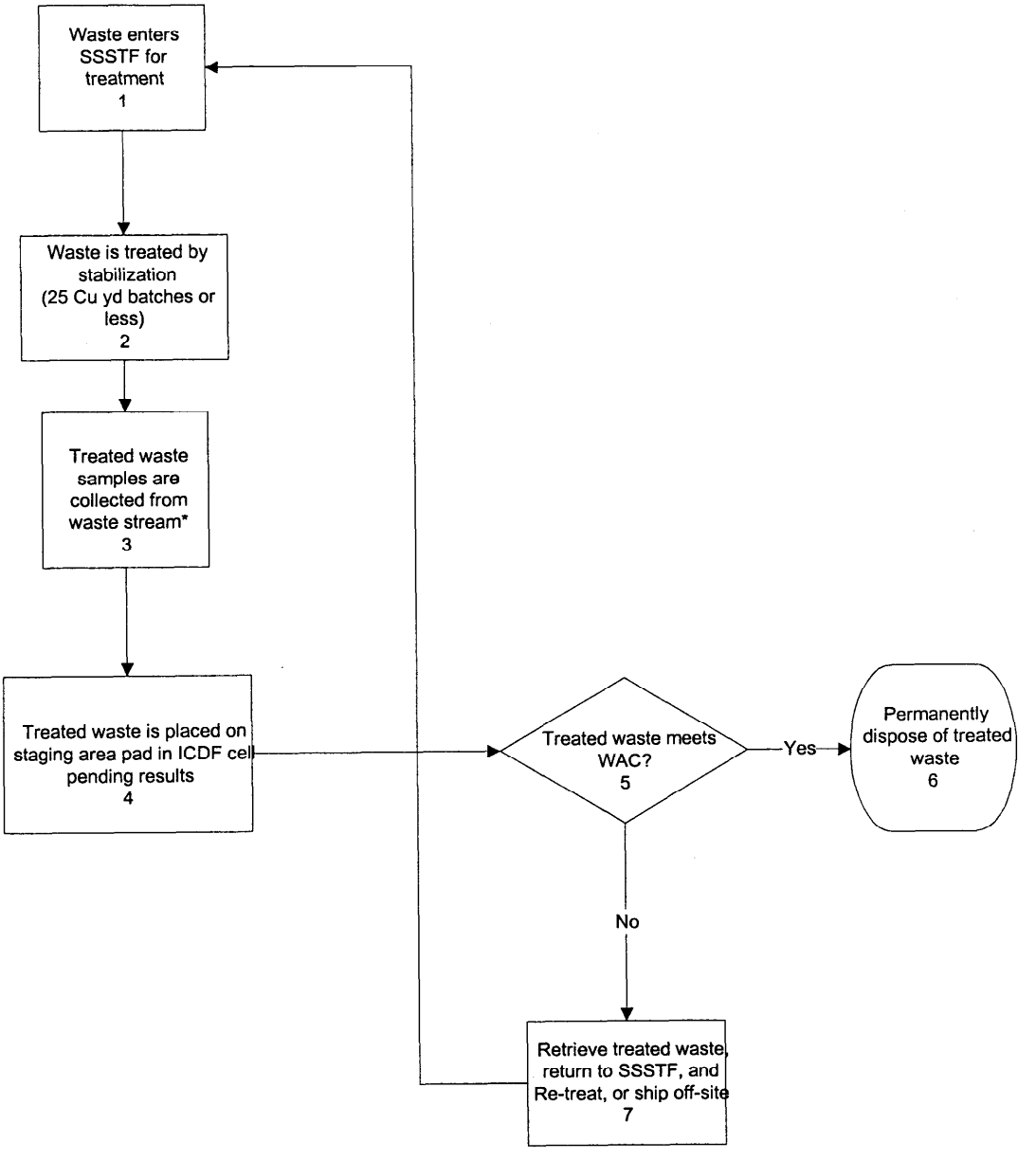


Figure 3-1. Non-Aqueous Waste Flow Path.



* Actual frequency of verification samples will vary by waste stream as per the Waste Analysis Plan

Figure 3-2. Treated Waste Verification Flow Path.

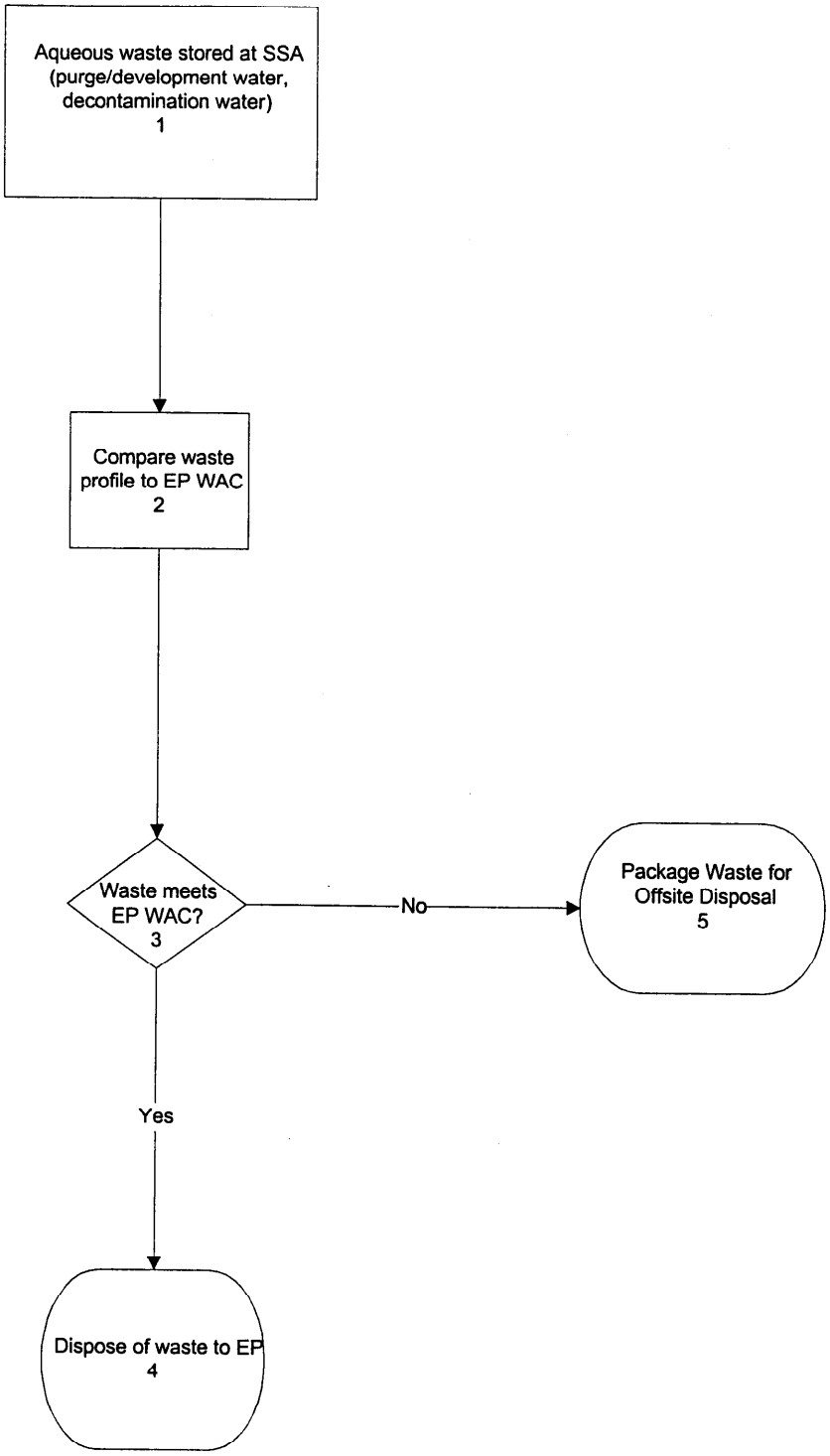
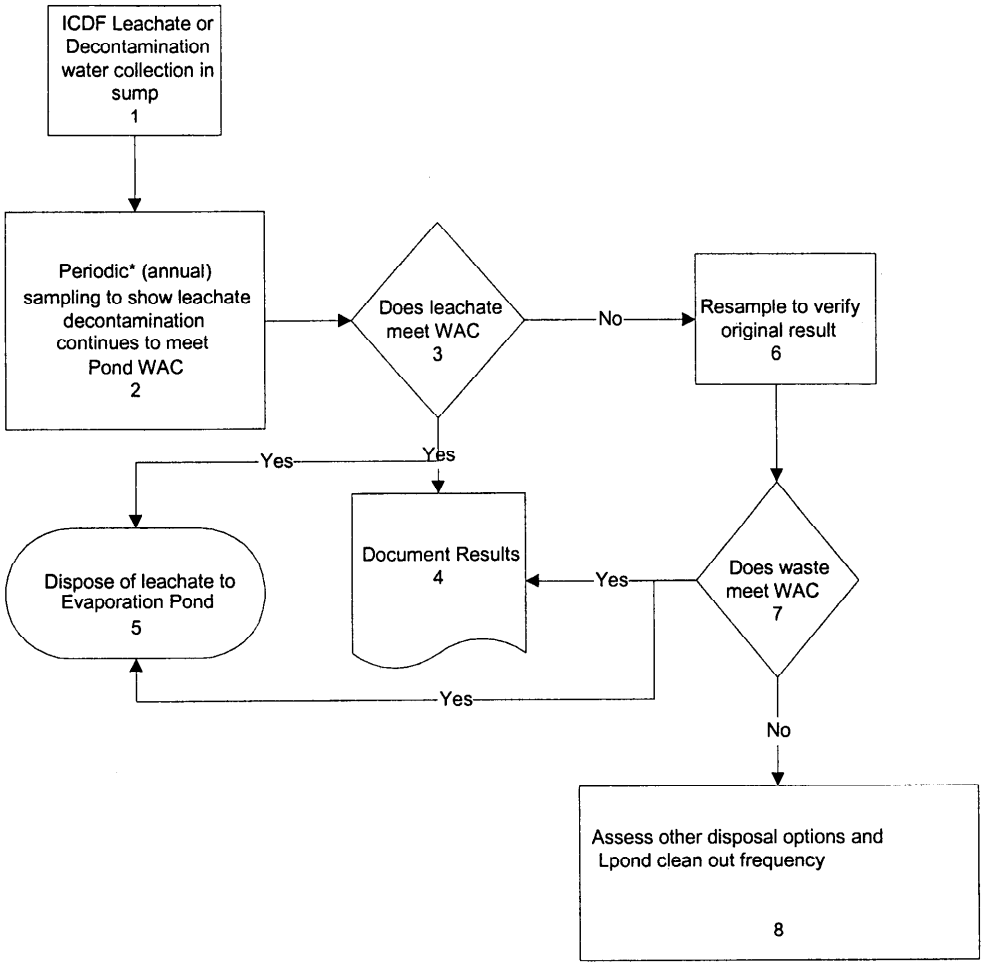


Figure 3-3. Aqueous Waste From SSA to Evaporation Pond Flow Path.



* The initial batches of both the leachate and decontamination water will be sampled and analyzed to show that the waste meets the EP WAC. Subsequent samples will be collected

Figure 3-4. ICDF Leachate to Evaporation Pond Flow Path.

- Upon receipt at the SSSTF, the paperwork documentation accompanying each shipment of waste will be reviewed (box 9). The waste shipment will be double-checked against accompanying documentation for items such as number of containers, container integrity, bar codes, and waste codes.

- If the documentation is incomplete or incorrect, issues with the documentation will be resolved, or the waste will be returned to the shipper (box 10).

- If the documentation is correct, the waste will enter the SSSTF gate (box 11).

- If the waste is suitable for direct disposal, it will be disposed in the ICDF landfill Cell (box 13)

- If the waste is entering the SSSTF for treatment, it will enter the process described in Figure 3-2.

3.3.2 Treated Waste Verification

Figure 3-2 shows the steps for treated waste verification and disposal. Treated wastes will be sampled to determine that the treatment was effective. If an aqueous waste is used as stabilization makeup water, it will exit the aqueous flow chart (Box 6, Figure 3-3) and will become part of a treated non-aqueous waste following stabilization, where it will be sampled as part of the treated waste stream. While verification samples are being analyzed, the batch of treated waste from which samples were collected will be temporarily placed in special areas of the SSSTF pending analytical results. Once analytical results confirm that the waste meets the WAC, it will be permanently disposed in the ICDF landfill. The following steps summarize Figure 3-2:

- Waste to be treated enters the treatment flow chart in box 1, following receipt and verification of paperwork shown in Figure 3-1.

- The waste is treated by stabilization (box 2).

- Verification samples are collected (box 3) from the treated wastes at a rate that will be defined in the Waste Analysis Plan.

- Treated waste is staged pending TCLP analytical results. (box 4).

- When analytical results confirm that treated waste meet the ICDF WAC, (box 5) the treated waste stream will be permanently disposed in the ICDF landfill Cell (box 6). Otherwise, the treated waste stream is returned to the SSSTF for re-treatment or for packaging and shipment off-site (box7).

Verification that treated waste meets the ICDF Landfill WAC will be focused on confirmation that the waste has been sufficiently stabilized to meet RCRA Land Disposal Restrictions (LDRs). The frequency of verification samples for each treated waste stream will depend on the variability of the untreated waste stream for the contaminants of concern (TCLP results for heavy metals). It is anticipated that the treatability studies will develop a "standard recipe" that will be robust enough to ensure all waste will meet the LDRs. Therefore, the verification sampling will also ensure that the treatment recipe remains stable and effective.

For soils sites, the waste will be homogenized during the various material handling activities (excavation and loading, unloading, and treating). The percentage of batches of any given treated waste stream will depend on both the waste stream variability (discussed in Section 3) and the size of the waste stream. For small waste streams, sampling of even one batch may effectively be 100% of the treated waste. For large waste streams, the frequency of sampling of treated batches will be determined statistically based on waste variability. Because the objective of waste stream sampling is to determine if the average concentration of the waste stream meets the requirements, composite sampling of treated batches will be used. Further development of the treated waste verification procedures will be included in the Waste Analysis Plan.

3.3.3 Aqueous Waste

Figure 3-3 shows the steps for disposal of aqueous waste that has been stored in the SSA/SSSTF. The steps below explain the flow chart:

- Aqueous waste (purge/development water from monitoring wells, and decontamination water from CERCLA activities) will be stored at the SSA/SSSTF (box 1). In order to be received for storage at the SSA/SSSTF the project or WAG where the waste originated must complete a Waste Profile sheet.

- The Waste Profile sheet used to send the waste to the SSA/SSSTF will be reviewed by ICDF Complex personnel to determine if the aqueous waste meets the EP WAC (boxes 2 and 3).

- If the waste meets the EP WAC, it will be disposed in the EP (box 4).

- If the waste stream does not meet the EP WAC, it will be packaged for off-site disposal (box 5).

It is unlikely that aqueous waste stored at the SSA/SSSTF will be unsuitable for disposal in the EP Initial NESHAPs analysis indicates that all of the purge and development water to be stored at the SSA can be accepted into the Evaporation Pond. The aqueous waste anticipated will be generated from contact with low-level mixed waste similar to waste that will be placed into the ICDF, and is not anticipated to exceed the EP WAC.

3.3.4 ICDF Landfill Leachate and ICDF Complex Decontamination Water

The EP is designed to accept the leachate from the ICDF Landfill. The EP is designated as part of a Corrective Action Management Unit (CAMU) in the OU 3-13 ROD. Land Disposal Restrictions do not apply within the CAMU. The WAC for the EP is driven by National Emission Standard for Hazardous Air Pollutants (NESHAPS) requirements for radionuclide releases to the air, by air emissions requirements for impoundments, and by liner compatibility requirements. Using the CERCLA Waste Inventory Database (CWID) as the inventory of waste to be disposed in the ICDF as a basis, leachate and decontamination water from contact with this waste is not likely to ever exceed EP WAC. Aqueous waste from decontamination activities related to waste handling and treatment operations in the SSSTF, and from ICDF Complex operations will have been in contact with the same wastes.

Aqueous decontamination wastes will be treated as one waste stream, and as such will be profiled, fingerprinted, and sampled initially to demonstrate that the waste meets the EP WAC. Sampling to confirm the waste stream meets the NESHAPs and air emissions ARARs is required annually. Figure 3-4 shows the flow chart for ICDF landfill leachate and ICDF Complex decontamination wastes. The figure is explained in the following text:

- Leachate or decontamination waste will be collected in a sump (for leachate) or a tank (for decontamination wastes) (box 1)

- Initial and periodic (annual) sampling will be performed to show that the leachate or decontamination waste continues to meet the EP WAC (boxes 2 and 3).

- If the waste meets the WAC, results will be documented in the operating file, and the waste will go to the EP (boxes 4 and 5).

- If the waste stream does not meet the WAC, it will be re-sampled to verify initial results (boxes 6 and 7).

- If the second set of analytical results indicate that the waste stream does not meet the EP WAC, the impact of disposal of the leachate or decontamination water to the EP since the last sampling event must be evaluated in terms of risk to human health and the environment (box 8) and a determination of whether or not corrective action is warranted (box 9) must be made.

The need for and type of corrective action will be case specific and is dependent on which waste stream did not meet the WAC, and for how long, and exactly why or how the WAC was not met. Based on the expected waste inventory, it is highly unlikely that either of these waste streams will fail the EP WAC. The purpose of the sampling is more for continued documentation that the WAC is being met, and to have an annual record of what was disposed to the EP than to "catch" a WAC excedance.

4. DESIGN REQUIREMENTS

The following design requirements will be necessary to accommodate this EDF:

- Staging pad inside fence for document verification and waste needing profile clarification

- Staging areas inside the SSSTF fence for treated waste pending analysis

- Computerized waste tracking system

- Bar code capabilities.

5. OPERATING ASSUMPTIONS

The following assumptions are necessary for the successful operation of the ICDF complex:

1. Wastes sent to the ICDF complex will need to meet the WAC of the ICDF landfill or the EP. Waste streams not meeting the WAC will not have an approved Waste Profile and will not be shipped to the SSSTF. The Waste Profile process will include audits or inspections by ICDF Complex personnel.

2. Generating WAGs will need to meet the above requirements or utilize other available treatment or disposal options available within U.S. Department of Energy (DOE) or commercial marketplace. The Remedial Action (RA) workplans and associated Waste Management Plans are expected to incorporate the above assumptions.

3. All waste received at the ICDF Complex will be "fingerprinted" to their associated approved waste profile by ICDF personnel during the remediation activities generating the waste. Wastes not passing the "fingerprinting" will not be shipped to the ICDF until the issue is resolved. This may cause further shipments by the waste generator to be halted until the issues are resolved.

4. Work associated with process stoppages, rejections, and issues resolutions will be the responsibility of the project where the waste originated. Failure to meet approved waste profiles will disrupt and cause delays in planned Environmental Restoration (ER) CERCLA actions and investigations, and waste disposal activities.

The following are additional assumptions:

1. All waste entering the SSSTF gate will have the following paperwork:

   - Approved Waste Profile
   - Analytical data
   - Treatability study, if required
   - Process knowledge
   - RI/Feasibility Study (FS) knowledge
   - Field screening/"fingerprinting" data to verify waste materials match the Waste Profile
   - SSSTF/ICDF WACs requirements.

2. The ICDF complex will not be Waste Isolation Pilot Plant (WIPP) certified.

3. Rejected waste will be the responsibility of originating project/WAG for further disposal/recharacterization.

4. Waste treated at the SSSTF will meet TCLP, paint filter, 50 psi requirements, and the ICDF or off-site disposal facility WAC, as appropriate.

5. ICDF landfill leachate and ICDF Complex decontamination water will be demonstrated to meet the EP WAC prior to discharge into the EP.

6. Purge/development water and similar aqueous wastes from outside the ICDF and SSSTF will be stored at the SSA/SSSTF prior to transfer to the EP. The Waste Profiles will be used to document whether the waste meets the EP WAC.

7. Waste for repackaging for disposal elsewhere will be accepted on a case-by-case basis.

6. REFERENCES

1. U.S. Department of Energy Idaho Operations Office, *Final Record of Decision Idaho Nuclear Technology and Engineering Center*, Operable Unit 3-13 DOE/ID-10660, Rev. 0, Idaho National Engineering and Environmental Laboratory, DOE/ID-10660, Rev. 0, October 1999.

2. Aspen Law and Business, *RCRA Regulations and Keywork Index, 2000 Edition* (ISSN-1074-1364), RCRA Superfund Questions and Answers, RCRA-309, pp. 1343–1344.

3. Environmental Protection Agency, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* Publication SW-846.

4. U.S. Department of Energy Idaho Operations Office, *Waste Management Plan for the Staging and Storage Annex*, DOE/ID-10800, September 2000.